

Application No.: 10/776,228**Docket No.: 2336-241****AMENDMENTS TO THE CLAIMS:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (canceled)
2. (previously presented) The method as set forth in claim 8, wherein the nitride semiconductor crystal film has the same composition as that of the first conductive nitride semiconductor layer formed thereon.
3. (previously presented) The method as set forth in claim 8, wherein the nitride semiconductor crystal film is a gallium nitride (GaN) film.
4. (previously presented) The method as set forth in claim 8, wherein the nitride semiconductor crystal film has a thickness of 1 to 10 micrometers.
5. (previously presented) The method as set forth in claim 8, wherein the step b) is performed by an HVPE (Hydride Vapor Phase Epitaxy) method.
6. (currently amended) The method as set forth in claim 5, further ~~comprising the~~ comprising a nitridation process step a') of the substrate, before performing the step b).
7. (previously presented) The method as set forth in claim 8, wherein the step c) is performed at a temperature not exceeding 800°C by making use of hydrogen gas or mixed gases

Application No.: 10/776,228

Docket No.: 2336-241

containing hydrogen.

8. (currently amended) A method of manufacturing a nitride semiconductor light emitting device, said method comprising the steps of:

- a) preparing a substrate for use in growth of nitride semiconductors;
- b) growing a un-doped nitride semiconductor crystal film on the substrate, the un-doped nitride semiconductor crystal film having a composition represented as $Al_xIn_yGa_{(1-x-y)}N$ ($0 \leq x \leq 1, 0 \leq y \leq 1, 0 \leq x+y \leq 1$);
- c) performing a surface treatment process on the un-doped nitride semiconductor crystal film by making use of hydrogen gas or mixed gases containing hydrogen, in order to remove an oxide film formed on the un-doped nitride semiconductor crystal film; and
- d) successively forming a first conductive nitride semiconductor layer, an active layer, and a second conductive nitride semiconductor layer on the un-doped nitride semiconductor crystal film;

said method further comprising the step c') of performing a heat treatment process on the un-doped nitride semiconductor crystal film, after completing the step c) and before forming the first conductive nitride semiconductor layer,

wherein the step c') is performed at a temperature of 100°C to 1500°C under the environment of gases including at least one selected from the group consisting of Nitrogen, Hydrogen, and Ammonia.

9. (previously presented) The method as set forth in claim 8, wherein the step d) is performed by an MOCVD (Metal Organic Chemical Vapor Deposition) method.

10. (previously presented) The method as set forth in claim 8, wherein the substrate for use in growth of nitride semiconductors is a sapphire substrate or SiC substrate.

Application No.: 10/776,228

Docket No.: 2336-241

11. (currently amended) A method of manufacturing a nitride semiconductor light emitting device, said method comprising the steps of:

- a) preparing a substrate;
- b) growing a un-doped nitride semiconductor crystal film on the substrate, the un-doped nitride semiconductor crystal film having a composition represented as $\text{Al}_x\text{In}_y\text{Ga}_{(1-x-y)}\text{N}$ ($0 \leq x \leq 1, 0 \leq y \leq 1, 0 \leq x+y \leq 1$);
- c) performing a surface treatment process on the un-doped nitride semiconductor crystal film using hydrogen gas or mixed gases containing hydrogen, in order to remove an oxide film presented on the un-doped nitride semiconductor crystal film; and
- d) after completing step c), performing a heat treatment process on the un-doped nitride semiconductor crystal film, from which said oxide has been removed; and
- e) successively forming a first conductive nitride semiconductor layer, an active layer, and a second conductive nitride semiconductor layer on the un-doped nitride semiconductor crystal film;

wherein

the heat treatment process of step d) is performed at a temperature of from 100°C to 1500°C in an atmosphere of at least one selected from the group consisting of nitrogen, hydrogen, and ammonia; and

steps a) through e) are performed in the recited order.

12. (previously presented) The method as set forth in claim 11, wherein the nitride semiconductor crystal film has the same composition as that of the first conductive nitride semiconductor layer formed thereon.

13. (previously presented) The method as set forth in claim 11, wherein the nitride semiconductor crystal film is a gallium nitride (GaN) film.

Application No.: 10/776,228Docket No.: 2336-241

14. (previously presented) The method as set forth in claim 11, wherein the nitride semiconductor crystal film has a thickness of from 1 to 10 μm .

15. (previously presented) The method as set forth in claim 11, wherein step b) is performed in an HVPE (Hydride Vapor Phase Epitaxy) reactor chamber.

16. (previously presented) The method as set forth in claim 15, wherein step a) comprises a nitridation process of the substrate.

17. (previously presented) The method as set forth in claim 11, wherein step c) is performed at a temperature not exceeding 800°C.

18. (previously presented) The method as set forth in claim 15, wherein step e) is performed in an MOCVD (Metal Organic Chemical Vapor Deposition) reactor chamber;

said method further comprising transferring, after step b), the nitride semiconductor crystal film from the HVPE reactor chamber to the MOCVD reactor chamber, during which transferring said oxide is formed on the nitride semiconductor crystal film.

19. (previously presented) The method as set forth in claim 11, wherein the substrate is a sapphire substrate or a SiC substrate.

20. (previously presented) The method as set forth in claim 11, wherein the heat treatment process of step d) is performed at a temperature of from 100°C to lower than 400°C.

21. (previously presented) The method as set forth in claim 11, wherein the heat treatment process of step d) is performed in an atmosphere of at least one selected from the group consisting of hydrogen and ammonia.